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PUC PROJECT NO. 52373

REVIEW OF WHOLESALE ELECTRIC MARKET DESIGN	**§**	**BEFORE THE PUBLIC UTILITY COMMISSION OF TEXAS**

LOWER COLORADO RIVER AUTHORITY'S RESPONSE TO QUESTIONS FOR COMMENT

TO THE HONORABLE PUBLIC UTILITY COMMISSION OF TEXAS:

The Lower Colorado River Authority (LCRA) respectfully submits the attached response to questions for comment on reforming the Electric Reliability Council of Texas (ERCOT) wholesale market. As directed in Commission Staff's October 25, 2021 memo, an executive summary is provided as the last page of this filing.

RESPONSE TO QUESTIONS FOR COMMENT

1. *The ORDC is currently a "blended curve" based on prior Commission action. Should the ORDC be separated into separate seasonal curves again? How would this change affect operational and financial outcomes?*

Response:

The Commission has been presented with a range of ORDC changes involving potential modifications to HCAP, VOLL, and MCL, as well as proposed standard deviation shifts. LCRA supports the Commission's decision to engage the Brattle Group to study the impacts of these various ORDC scenarios, and encourages the Commission to continue to evaluate the combined effects of these types of changes, rather than considering modifications to the constituent components of the ORDC in isolation. The same goes for this aspect of the ORDC—blended versus separate seasonal curves.

As the Commissioners discussed at the October 21, 2021 work session, ORDC reforms should be approached in a balanced manner that improves—rather than exacerbates—the problem of insufficient market revenues to support investment in dispatchable generation. LCRA expects

that separate seasonal curves will result in decreased wholesale revenues in the shoulder months, based on past seasonal curves.

2. *What modifications could be made to existing ancillary services to better reflect seasonal variability?*

Response:

As set forth in LCRA's prior comments and work session presentations in this project, LCRA supports the Commission directing ERCOT to annually procure a Dispatchable Reliability Service product that will provide resiliency during times of seasonal variability. Similarly, Vistra's proposed Dispatchable Standby Reserves (DSR) ancillary service product would provide a market-based source of certainty around the quantity and cost of additional operating capacity to secure reliable system operations. Both of these proposals address the requirements of Senate Bill 3 and provide a direct solution to valuing reliability that will produce near-term results—not five to ten years out from when the Commission adopts a final market design plan.

LCRA also notes that the ERCOT Contingency Reserve Service (ECRS) product, approved as part of Nodal Protocol Revision Request 863, is designed to address potential future operational issues related to ramping. These issues do not currently exist in ERCOT today. As seen in the latest Astrape Reserve Margin Study report on the impacts of additional solar, ERCOT will need to see solar penetration of 20,000 MW before such a product is necessary to resolve ramping issues from high variability renewable resources. In addition, LCRA does not believe that ECRS will incentivize significant new dispatchable generation in ERCOT. ECRS is a short-duration product mainly intended for new batteries. As a result, ECRS will not assist in resolving the types of operational issues that were experienced during Winter Storm Uri and will not address today's need for grid resiliency. To remediate those types of issues, a winter ancillary service product will be needed.

3. *Should ERCOT develop a discrete fuel-specific reliability product for winter? If so, please describe the attributes of such a product, including procurement and verification processes.*

Response:

Yes. Under LCRA's Firm Fuel Service (FFS) proposal, the Commission would order the creation of a new ancillary service product designed to ensure that sufficient generation capacity remains online and available to ERCOT during an extreme weather event. ERCOT would procure FFS through contracts awarded to qualified resources for an initial contract period to be determined by the Commission.

To be qualified to provide FFS, a resource would need to be capable of providing energy for a continuous 24-hour period, a duration arrived at based on analysis of the operational issues experienced during Winter Storm Uri. This analysis considered the time needed to truck in additional fuel oil, pressure issues that impacted gas pipelines, and storage injection and withdrawal cycles. In addition, the 24-hour duration requirement is directly responsive to the requirement in Senate Bill 3 that the Commission must ensure that a firm fuel-type ancillary service includes winter resource capability qualifications to ensure winter performance for days, not merely hours.

The cardinal feature of the FFS proposal is that the resource must demonstrate that it has a firm fuel supply for the required 24-hour duration. A resource could be considered to have a firm fuel supply if it has dual fuel capability; energy storage capability sufficient to power the resource continuously for 24 hours; on-site fuel sufficient to power the resource continuously for 24 hours; or direct interconnections to two or more natural gas pipelines or a direct interconnection to a natural gas storage facility, if the resource is primarily fueled by natural gas. A resource could be awarded FFS only for the amount of capacity that is supported by the firm fuel technology, if that amount is less than the full nameplate capacity of the resource. ERCOT would also need to adopt

qualifications through Protocols and other necessary changes to establish the full set of requirements for a resource to participate in FFS, as well as develop testing requirements and compliance metrics to ensure that an FFS resource is subject to Commission oversight for performing when called upon and operating in compliance with all applicable rules and Protocols.

a. How long would it take to develop such a product?

As ERCOT described at the October 14, 2021 work session, a winter firm fuel product can be implemented on a standalone basis (i.e., not procured through the market management system or optimized with other ancillary services). This will allow a new product to be in place as soon as possible, potentially in time for the 2022-2023 winter season. To most quickly implement this proposal, ERCOT's initial procurement would need to focus on resources with existing firm fuel capabilities. Pursuant to policy direction from the Commission and information submitted by resources with existing firm fuel capabilities, ERCOT could determine an initial quantity of FFS to be procured and the geographic distribution of FFS resources needed for the initial contract period.

To minimize the cost of an FFS program over the longer term, ERCOT could be directed to engage a qualified third-party expert to solicit and evaluate proposals for additional fuel resiliency projects and select the most cost-effective proposals for a "second phase" of the program and subsequent contract periods.

b. Could a similar fuel-based capability be captured by modifying existing ancillary services in the ERCOT market?

Theoretically, yes. However, LCRA is concerned that this will add additional complexity and that the required system changes will result in delaying any benefits to consumers until after 2024, once ERCOT's energy management system overhaul is complete.

4. *Are there alternatives to a load serving entity (LSE) Obligation that could be used to impose a firming requirement on all generation resources in ERCOT?*
5. *Are there alternatives to an LSE Obligation that could address the concerns raised about the stakeholder proposals submitted to the Commission?*

Response:

Yes. The purpose of LCRA's proposed Resource Adequacy Adder (RAA) is to allow ERCOT to calculate the cost of serving firm load with firm generation, and thus the value of providing firm generation to the grid. Calculating and allocating the energy cost of providing firm generation to serve firm load presents an alternative to mandating a capacity obligation.

As this Commission has recognized, the increase in intermittent generation places increased economic pressure on existing thermal generation, due to fewer settlement intervals during which thermal generation units can earn enough money to recoup their long run marginal cost. This shortfall in earnings is often referred to as the "missing money" or the money that is needed to cover the long run marginal cost of energy.

Similar to other proposals, the RAA concept involves calculating the Effective Load Carrying Capability (ELCC) of each resource type. ELCC provides a way to access the reliability contribution of a resource that is tied to the Loss of Load Expectation (LOLE). The ELCC for renewable resources is the value that is consistent with the capacity value for dispatchable thermal resources. A resource that contributes a significant level of capacity during high risk hours will have a higher capacity value (ELCC) than a resource that contributes the same level of capacity but during low risk hours.[1] Wind and solar resources often provide many hours of off-peak and on-peak generation in excess of their ELCC. This non-firm generation contribution distorts the true cost of providing adequate reliability to the grid.

[1] The 2020 Astrape study projects that the ELCC for all wind generation in ERCOT is 16% and all solar generation in ERCOT is 74%.

ERCOT can compute the cost of serving firm load with firm generation during the pricing run, just as the Real-Time On-Line Reliability Deployment Price Adder (RDPA) is computed. The RAA value would be determined by calculating the amount of renewable generation in excess of the ELCC for renewable generation in ERCOT every five minutes. For instance, Astrape calculated the ELCC for all wind generation as 5,049 MW and for all solar generation as 4,387 MW in 2020. In calculating the RAA, any intermittent generation in excess of those respective quantities will be identified during the pricing run. In this way, the Security Constrained Economic Dispatch (SCED) engine can determine the marginal cost of serving firm load with firm generation; the difference in the marginal cost of serving firm load with firm and non-firm generation, and the marginal cost computed by removing the non-firm generation in the pricing run, could be added as an "RAA variable" in SCED. The Settlement Point Price (SPP), which is computed at every node, is calculated by adding the Locational Marginal Price plus the ORDC plus the RDPA. By adding RAA as a variable to the SPP, ERCOT could generate real-time energy prices that include the cost of serving firm load with firm generation. The RAA could simply be added to the real-time reserve price that is paid to thermal generation, just like the RDPA is added today, and the Commission could decide, as a matter of policy, how to allocate that cost.

Questions 6-16 relating to the LSE Obligation

LCRA appreciates the Commission's comprehensive list of questions related to the proposed LSE obligation. At the outset, LCRA acknowledges that many of these questions are difficult to fully address at this time, due to the lack of details about some aspects of this proposal and the number of policy issues to be further developed. At a high level, LCRA's initial reaction is that the LSE obligation represents a significant departure from the existing wholesale market design and that implementation could be challenging and time-consuming. LCRA also has

concerns that smaller LSEs may be at disadvantage if they do not have the collateral or capital to reasonably predict or hedge to their expected obligation. In addition, LCRA expects that this fundamentally different market construct will impose additional administrative and overhead costs, and smaller entities will be less equipped to shoulder those burdens relative to larger players in the market.

In addition to the Commission's questions posted for comment, LCRA has other questions about the LSE obligation, including:

- Comparing ERCOT's historical yearly load forecasts to actual load, the range of variation was as much as 42% higher than forecasted and up to 62% lower than forecasted. Given the historical inaccuracy of ERCOT's load forecasting and the fact that few LSEs have the ability to accurately forecast their own load, does this create concerns about the forward assessment and the potential costs to LSEs if they are required to obtain credits above their actual obligation?
- Conversely, will under-forecasting the actual LSE obligation fail to protect the market against extreme weather events like Winter Storm Uri?
- What credit requirements should be expected for participating in this new bilateral market, and how are those costs being accounted for in analyzing this proposal? The Commission should consider whether LSEs will have the ability to secure sufficient credit to manage the variation and volatility that this new process will likely require. For example, ICE requires an initial margin to execute a transaction, as well as a daily variation margin based on market movement and any open positions (i.e., mark to market movements). The variation margin requirements are due the next day. Based on historical ancillary service prices, an LSE with five percent ERCOT market share could be required to post daily variation margins between $50,000 and $300,000. During an event like Winter Storm Uri, the same LSE would be subject to daily variation margins in excess of $100 million.
- How will resource credits and the LSE reliability obligations be assigned? Will they vary by season? Can they be disputed?
- What new administrative processes will need to be developed and how will a clearinghouse be established for the administration of this program?
- What happens if an LSE defaults? Who assumes responsibility for the defaulting LSE's customers?
- On what timeframe should this proposal expect to produce new dispatchable generation? Has analysis been performed to project the anticipated implementation timeline against the expected development of investment signals sufficient to incentivize new build and ultimately construct those resources? Will the LSE obligation, given the timeframe necessary to implement it, incentivize new dispatchable generation in accordance with the

Legislature's intent in Senate Bill 3, or will more reforms need to be undertaken in the interim?

- Other markets where the LSE obligation has been implemented include California; however, the fact that the State of California recently ordered additional peaking generation suggests that their LSE obligation may not be working.[2] Is this situation distinguishable, and if so, how?

CONCLUSION

LCRA profoundly appreciates the work of the Commissioners, Commission Staff, and the stakeholders who have been diligently working to support implementation of Senate Bill 3 and respond to the Governor's directives. This is a monumental task, and while LCRA recognizes that certain fundamental changes are imperative, it is also evident that some market reform proposals need further evaluation and refinement and may take many years to implement. A complex overhaul of ERCOT wholesale market design is not required either by Senate Bill 3 or the Governor's letter and should not be the Commission's focus at this time. Instead, LCRA respectfully asks that the Commission adopt a final design plan that endorses the types of near-term solutions presented below to achieve the mandate it has been assigned:

SB 3 Requirement	Potential Solution	Anticipated Timeline
Ensure that "winter resource capability qualifications for [ancillary or reliability services] include on-site fuel storage, dual fuel capability, or fuel supply arrangements to ensure winter performance for several days"[3]	Firm Fuel Service	As soon as ERCOT deems practicable, but no later than the Winter 2022-2023 season
Evaluate whether additional services are needed for reliability in the ERCOT power region while providing adequate incentives for dispatchable generation[4]	Dispatchable Reliability Service or Dispatchable Standby Reserves (DSR) ancillary service product	One to two years

[2] https://www.powermag.com/california-will-add-gas-fired-units-to-increase-power-supply/
[3] PURA § 39.159(c)(2).
[4] PURA § 35.004(g)(2).

Ensure that ERCOT establishes requirements to meet the reliability needs of the power region[5]	Adopt formal reliability standard (e.g., 1 in 10 years)	Immediately, as part of Commission's final design plan
Ensure that resources providing ancillary or reliability services "are dispatchable and able to meet continuous operating requirements for the season in which the service is procured"[6]	Dispatchable Reliability Service or Dispatchable Standby Reserves (DSR) ancillary service product	One to two years

Respectfully submitted,

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[5] PURA § 39.159(b)(1).
[6] PURA § 39.159(c)(1).

LCRA's Executive Summary

- Senate Bill 3 requires the Commission to ensure that **"winter resource capability qualifications for [ancillary or reliability services] include on-site fuel storage, dual fuel capability, or fuel supply arrangements to ensure winter performance for several days."**
  - LCRA echoes the broad consensus supporting the development and procurement of a winter Ancillary Service (AS) product with these specific qualifications.
  - Similar to how the ERS program is administered, a Firm Fuel Service product would allocate a fixed amount of revenues to resources that invest in fuel resiliency.
  - This type of product is the best tool in the Commission's toolkit to address one of the major factors that made Winter Storm Uri so devastating; other structural improvements to the natural gas supply chain depend on third party action beyond the Commission's and resource owners' control.
  - As ERCOT has described, this product can be implemented on a standalone basis (i.e., not procured through the market management system or optimized with other AS) in order to have it in place as soon as possible.
- In addition to a winter reliability product, which solves a specific operational problem, Senate Bill 3 requires the Commission to **"evaluate whether additional services are needed for reliability in the ERCOT power region while providing adequate incentives for dispatchable generation."**
  - The Commission should directly confront the current dispatchable resource supply inadequacy problem. If the Governor's directive to incentivize new dispatchable generation is going to be achieved, the Commission's final plan needs to include near-term changes that can be implemented within the next one to two years.
  - Dispatchable Reliability Service is an additional ancillary service product that is needed and that can be implemented quickly.
  - To provide price certainty for dispatchable resources, ERCOT should procure this product annually, based off seasonal needs, from resources with specific performance qualifications (i.e., 30-minute start capability and 24-hour sustained duration) and require a $10/MWh energy price floor.
- A comprehensive, long-term solution to address the lack of dispatchable resources in ERCOT should focus on reflecting the true value that firm generation resources provide to the grid. Signals to both maintain existing and incentivize new dispatchable generation resources depend on whether the market design allows those "missing" revenues to be recovered.
  - LCRA's Resource Adequacy Adder (RAA) proposal is a modification to the engine that determines real-time energy prices. The RAA would re-calculate real-time energy prices as though all demand on the system was being served by firm generation. The degree to which each resource type's output is characterized as "firm" would be determined by its effective load carrying capability (ELCC).
- Other proposals under consideration have significant implementation hurdles, and LCRA is concerned that they will not translate to dispatchable resource investment in ERCOT.
  - LCRA anticipates that the LSE obligation proposal will be complex, contentious, and timely to implement. It represents a substantial departure from the existing market design—at an unknown and potentially uneven cost to consumers—and does not provide a clear path for either adding new or maintaining existing dispatchable resources.
- While ramping issues are not yet a concern in ERCOT, LCRA agrees that ECRS is an appropriate solution, should this become an operational challenge in the future.